

10/519,855

06/30/03 - PCT

\$ Auf Ag-Ab Only

NO  
ENGL.  
TRANSL.

{ 03/18/03 - FP  
07/01/02 - FP

- 15 -

### CLAIMS (1-7)

- 112R2 → 1,4,5  
112R1  
SCOPE 5
1. A monoclonal antibody belonging to human IgM for specifically recognizing HIV-infected cells to induce apoptosis to the infected cells.
- 112R2 2,3,4,5  
112R1  
10
2. A remedy for HIV-infection diseases comprising a human IgM antibody as an effective ingredient, the antibody specifically recognizing HIV-infected cells and inducing apoptosis to the HIV-infected cells.
3. A remedy according to Claim 2 for preventing onset of AIDS.
- 15  
Prel.  
DRP.  
112R1  
20
4. The human IgM monoclonal antibody according to any one of Claims 1 to 3, wherein the human IgM monoclonal antibody that reacts with the HIV-infected cells is 2G9 antibody comprising a base sequence of the H-chain variable region represented by sequence No. 1.
- Prel.  
DRP.  
112R1  
25
5. The human IgM monoclonal antibody according to any one of Claims 1 to 4, wherein the human IgM monoclonal antibody that reacts with the HIV-infected cells is 2G9 antibody comprising a base sequence of the L-chain variable region represented by sequence No. 2.
- 1) REG. DRSCR. GENE/PROTEIN  
2) SEQ. REG. 3 - AA-NT  
3) REG. DRSCR. - ONLY 3 REGS; SPRC. DRSCR. 4/5 (p. 5)  
4) Table 1 is missing; Table 2 is missing  
5) ORG OR SPRC.
- 1) REG. DRSCR. UNKNOWN  
2) CORRECT POT. OF NO  
3) REGULAR SPACERS  
4) NO IN VIVO/CLINICAL TESTING
- DOES THAT  
INDUCE APOPTOSIS?  
ON DOES IT DO?  
APOPTOTIC CELLS?
- CELL 1991  
66(2): 239
- REGS. OK TO  
- SPRC OK TO

112P2  
112P1  
6. A 2G9 antibody-producing cell (strain) with an  
accession No. FERM BP-8378 belonging to human IgM  
{specifically recognizing HIV-infected cells to induce  
5 apoptosis to the infected cells.}

112P2  
112P1  
7. The monoclonal antibody according to any one of  
Claims 1 to 5 produced by the cell (strain) with an accession  
No. FERM BP-8378.

10

112P2

FACTORY, NOT CELL

112P2  
112P1

112P2

- 2G9 MAb induces apoptosis

- recognizes infected & latent cells (?)

accession number of FERM BP-8378.

The antigen (2G9 antigen) that reacts with 2G9 antibody is considered to lose its reactivity with 2G9 antibody by treating with SDS.

5        Table 1 shows the results of base sequence analysis of the genes in the variable regions in  $\kappa$ -chain and  $\mu$ -chain, respectively, encoding 2G9 antibody. The base sequence of the constant region is approximately the same as the base sequence of reported genes.

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TABLE 1

Base Sequence of  $\mu$ -Chain Variable Region

Base Sequence of  $\kappa$ -Chain Variable Region

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The antibody according to the first aspect, for example 2G9 antibody, is able to induce apoptosis to HIV-infected cells including OM10.1 cells. In other words, this antibody is IgM monoclonal antibody capable of specifically inducing  
20 apoptosis to the HIV-infected cells. Since the antibody is also able to induce apoptosis to HIV latently infected cells such as OM10.1 cells, it can be used as a remedy for eliminating HIV latent infection lurking in HIV-infected patient's body in which chemotherapeutic agents cannot  
25 exhibit their effects.

shown in Table 2, such as the base sequence of the variable region of original 2G9 antibody as well as those obtained by changing used codons. Base sequences having certain kinds of restriction enzyme recognition fragment were selected  
5 from the sequences for every length capable of chemically synthesizing as oligonucleotides (Table 2).

TABLE 2: Examples of cDNA encoding equivalent amino acids in the amino acid sequences of 2G9 antibody

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Oligonucleotides were chemically synthesized based on the base sequence divided for each restriction enzyme-recognition fragment. After sequentially digesting the synthesized oligonucleotide with a corresponding restriction  
15 enzyme, a full length of a base sequence encoding the amino acid sequence of the 2G9 antibody variable region by ligation was obtained. cDNA fragments of the 2G9 antibody variable regions of the H-chain and L-chain obtained by the same method with each other (named as rV $\mu$ 2G9 and rVk2H9,  
20 respectively) were integrated into vectors having constant region gene sequences of H-chain and L-chain of the human IgM antibody (C $\mu$  and C $\kappa$ , respectively) by the same method as forming chimera antibodies to obtain recombinant 2G9 $\mu$ -chain and  $\kappa$ -chain expression plasmids (rV $\mu$ 2G9-C $\mu$  and rVk2G9-C $\kappa$ ,  
25 respectively; Fig. 5).